

A polysilicon resistor film is formed on the first insulating film. A second insulating film is formed on the resistor film. A high heat conductor film consisting of a highly heat-conducting material is formed on a second insulating film. A pair of terminal wirings are formed on the second insulating film and connected to the resistor film. The thickness of the high conductor film is thicker than a thickness of the resistor film.

Another aspect of this invention, per claim 6, is a semiconductor device, comprising a semiconductor substrate and a first insulating film formed on said semiconductor substrate. A polysilicon resistor film is formed on the first insulating film and a second insulating film is formed on the resistor film. A high heat conductor film consisting of a highly heat-conducting material is formed on the second insulating film. A pair of terminal wirings are formed on the second insulating film and are connected to the resistor film. A thickness of the second insulating film is thinner than a thickness of the resistor film, and a thickness of the high heat conductor film is thicker than a thickness of the resistor film.

The Examiner asserts that Usami teaches the semiconductor device, including a semiconductor substrate 1, a first insulating film 2, a polysilicon resistor film 6, 7, a second insulating film 9, a high heat conductor film 13, and a pair of terminal wirings 11, 12.

Contrary to the Examiner's assertion, Usami does not disclose the claimed semiconductor device. Usami does not disclose the high heat conductor film consisting of a highly heat-conducting material formed on the second insulating film, as required by claims 2 and 6. As acknowledged by the Examiner, the asserted high heat conductor film 13 is an **insulating film**. An insulating film, particularly a silicon oxide film, would not be considered a high heat conductor film by one of ordinary skill in this art. One of ordinary skill in this art would understand that an insulating film is the opposite of a conductor film.

The Examiner asserts that "it is inherent that the insulating film (13) is a high heat conductor film." The Examiner provides no **factual** basis for this assertion of inherency. There is no teaching in Usami that the insulating film 13 is a high heat conductor film, nor is there any teaching in Usami that silicon oxide is a highly heat-conducting material. One of ordinary skill in this art would consider silicon oxide to be an insulating material, not a highly heat-conducting material. Likewise, one of ordinary skill in this art would consider a silicon oxide film to be an insulating film, not a high heat conductor film.

The Examiner's assertion that it is inherent that the insulating film 13 is a high heat conductor film is not supported by any factual basis. "In relying upon a theory of inherency, the examiner must provide a rational basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). MPEP § 2112. The Examiner has not shown that the allegedly inherent characteristic (highly heat conducting) necessarily flows from the teaching of Usami. As described in Usami, the silicon oxide film is an insulating film.

A silicon oxide insulating film, as would be readily apparent to one of ordinary skill in this art, is not a high heat conductor film. It would be readily apparent to one of ordinary skill in this art that a silicon oxide film would be a **low** heat conductor film. As described in *Hawley's Condensed Chemical Dictionary* (attached), silica (silicon dioxide) has a thermal conductivity about half of that of glass, and glass has **low** thermal conductivity. It is clear that the silicon oxide insulating film 13 of Usami is a **low** heat conductor film, not a high heat conductor film.

The factual determination of lack of novelty under 35 USC § 102 requires the disclosure in a single reference of each element of a claimed invention. *Helifix Ltd. v. Blok-Lok Ltd.*, 208 F.3d 1339, 54 USPQ2d 1299 (Fed. Cir. 2000); *Electro Medical Systems S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 32 USPQ2d 1017 (Fed. Cir. 1994); *Hoover Group, Inc. v. Custom Metalcraft, Inc.*, 66 F.3d 399, 36 USPQ2d 1101 (Fed. Cir. 1995); *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051 (Fed. Cir. 1987). Usami does not teach the high heat conductor film, as required by claims 2 and 6, therefore Usami does not anticipate claims 2 and 6. Applicant submits that the rejection of the claims as anticipated by Usami is clearly in error and should be withdrawn.

Rejections Under 35 USC § 103

Claim 4 is rejected under 35 USC § 103(a) as being unpatentable over Usami. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The Examiner asserts that it would have been obvious to make the width of the high heat conductor film wider than a width of the resistor film because it depends on the amount of heat that needs to be dissipated from the resistor.

The instant claims are not obvious in view of Usami. As explained above, Usami does not disclose the high heat conductor film, as required by claim 2. Applicant further submits that Usami does not suggest the claimed high heat conductor film. The **insulating** silicon oxide low heat conductor film of Usami would not suggest the high heat **conductor** film required by claim 2.

Furthermore, the Examiner does not provide any factual support for the asserted motivation for forming a high heat conductor film wider than a width of the resistor film, as required by claim 4. Obviousness can be established only by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Usami does not suggest a semiconductor device as claimed wherein a high heat conductor film is formed on the second insulating film, and a width of the high heat conductor film is wider than a width of the resistor film.

The requisite motivation to support the ultimate legal conclusion of obviousness under 35 U.S.C. § 103 is not an abstract concept, but must stem from the applied prior art as a whole and realistically impel one having ordinary skill in the art to modify a specific reference in a specific manner to arrive at a specifically claimed invention. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Newell*, 891 F.2d 899, 13 USPQ2d 1248 (Fed. Cir. 1989). Accordingly, the Examiner is charged with the initial burden of identifying a source in the applied prior art for the requisite realistic motivation. *Smiths Industries Medical System v. Vital Signs, Inc.*, 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999); *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1449 (Fed. Cir. 1997). There is no motivation in Usami produce a semiconductor device with a high heat

conductor film formed on the second insulating film, as required by the instant claims, and wherein the width of the high heat conductor film is wider than a width of the resistor film, as required by claim 4.

The only teaching of a semiconductor device with a high heat conductor film formed on the second insulating film, and a width of the high heat conductor film is wider than a width of the resistor film is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The Examiner's conclusion of obviousness is not supported by any **factual** evidence. The Examiner's retrospective assessment of the claimed invention and use of unsupported conclusory statements are not legally sufficient to generate a case of *prima facie* obviousness. The motivation for modifying the prior art must come from the prior art and must be based on facts.

The dependent claims further distinguish the claimed invention over Usami. Claim 3 for example, requires that the thickness of the high heat conductor film is twice the thickness of the resistor film or thicker, and claim 5 requires that the high heat conductor film is united with one of the terminal wirings.

In light of the remarks above, this application is in condition for allowance, and the case should be passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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Date: April 14, 2003